Laparoscopic Sterilization

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Laparoscopic tubal ligation is an effective means of permanent sterilization. The recently released CREST study underscores the need for proper patient selection and counseling.

Permanent sterilization is the most popular method of contraception for married couples in the United States.[1] During laparoscopy's early years in the 1970's, tubal sterilization was the first operative procedure undertaken by gynecologists. The fallopian tubes were easily accessible, and the procedure was usually quick and bloodless. Failure rates from laparoscopic sterilization were thought to be low, in the range of 3-4 per thousand.

Different techniques to destroy a segment of the tube were employed. Palmer used unipolar tubal coagulation in 1962.[2] Forceps grasped the tube, and current was applied to the held end. The current was applied from the forceps through the patient's body and exited through a ground plate, or a return electrode, placed on the patient's body. The resultant tissue injury was large and extended far beyond the area that was grasped. The unipolar electrical procedure was associated with serious complications from capacitation of the electrical charge which caused bowel burns when the coagulating current discharged to adjacent bowel.

In 1972, the bipolar forcep was designed for tubal sterilization.[3] This method differed from the unipolar system in that current flowed only through the jaws of the forceps and not the patient. There was no danger for capacitation. The tissue damage was minimal, discrete and localized. An ampmeter was added to this system so the surgeon knew when coagulation was complete.

Mechanical occlusion devices were also designed during this early period. The Hulka Clip[4] was a spring loaded clip with interlocking teeth that obliterated the tubal lumen when closed. Only 3-4 mm of tube was damaged by the clip. This method was associated with the best tubal reversal success due to the minimal damage incurred. Yoon[5] devised the Falope Ring: a silastic ring which was loaded over the sheath of an applicator forcep. A loop of tube was drawn up within the central hollow cylinder of the ring applicator. The ring was then released over the looped fallopian tube and the occluded segment became devascularized and necrosed.

More recently, the CREST study – the U.S. Collaborative Review of Sterilization[6] – presented in September 1995, has caused many gynecologists to re-evaluate their methodology. This study recruited more than 10,000 women from 16 medical centers including Hawaii, and was the first long-term study of patients 8-14 years after sterilization.

The results from the CREST study were surprising. Failure rates depended on the method, age of the patient and the timing of the procedure. The overall failure rate was 1.9% - more than triple the quoted standard failure rate for tubal sterilization. The failure rates differed on method. Postpartum partial salpingectomy had the lowest failure rate of 0.8%, followed by unipolar coagulation. As noted previously, complications from unipolar coagulation was most likely to result in serious injury or death. The next effective method was the Falope Ring with a relative risk of pregnancy of 2.34, followed by bipolar coagulation with a RR of 3.2. The Hulka Clip had the highest failure rate of 3.7RR.

It was once believed that the first year after sterilization was when most failures occurred; the CREST data showed that this too was a myth. Cumulative failure rates rose steadily through ten years post-sterilization. The risk of failure was greatest in younger women, presumably due to their many years of potential fertility. Thirty three percent of the failures were ectopic pregnancies, which heightened our surveillance for this potentially life-threatening occurrence.

The CREST study should shed more light on the "Post-Tubal Ligation Syndrome" as well. Studies thus far have been too short – term to determine if such an entity truly exists. Common symptoms attributed to the syndrome include pelvic pain, change in sexual behavior, changes in mental status, alteration of menstrual cycles, increased blood loss and exascerbation of PMS.

In summary, laparoscopic tubal ligation is an effective means of permanent contraception. Patients must be carefully selected and counseled for risks of long-term failure.

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